Conduct of Operations Course

Lesson:

Performance Measurement

Time Required: 45 minutes

Reference:
(a) DOE 5480.19, Conduct of Operations Requirements for DOE Facilities, Chapter 1
(b) DOE/EH-0256T, Radiological Controls Manual
(c) Planning and Measurement in Your Organization of the Future, D. Scott Sink, Institute of Industrial Engineers, Norcross, GA,1989.
(d) Rocky Flats Field Office General Technical Base Study Guide.

Objectives: Upon completion of this lesson:

(VG-13-1, 2)

1. Describe the Cost Plus Award Fee (CPAF) process and the role that it plays in the management of Department facilities. (1.l)
2. Discuss the considerations for establishing performance indicators. (2.b)
3. Identify possible performance indicators for a nuclear facility, and discuss their meaning to the management of safe facility operations. (2.c)

4. Discuss the methods for measuring and reporting performance to performance indicators. (2.d)
5. Discuss the considerations that must be evaluated to properly interpret performance from performance indicators, and to establish performance goals. (2.e)
6. Referring to DOE Order 5480.19 and its attachments, describe the methods of measuring performance. (2.f)
7. Discuss the methods of performance data collection and trending, and the importance of trend analysis to operations surety. (2.l)

Instructional Aids/Materials:

1. Overhead projector, projection screen and viewgraphs
2. Instructor Guide and Student Workbooks
3. DOE-EM-STD-5505-96, Operations Assessments
4. DOE/EH-0256T, Radiological Controls Manual

Presentation Method: Lecture, Class Discussion

Instructor Notes:

1. Instructors should read the contents of this instructor guide and the student workbook, and review applicable portions of the listed references (as needed) when preparing for the lecture. Instructors are free to personalize, however, the key points made in the instructor guide must be covered.

2. The student guide is designed to promote note taking. There are many items in the student guides which do not have the corresponding information filled in, particularly, areas where guidelines are reviewed. The instructor should cover the corresponding information during the lecture and encourage students to take sufficient notes.

3. The italicized words are for instructors only and do not appear in the student workbook.

4. **VG** indicates that there is a viewgraph associated with the information, and it should be displayed on the overhead projector.

I. Performance Measurement Overview

Throughout history, managers have been searching for the secret formula to increase the output of their organization. Managers have sought and implemented various tools to motivate workers, increase productivity, and improve quality, while at the same time increasing profitability. However, it was not until the mid-1900s that men such as Juran and Deming instituted various performance measuring techniques and revolutionized the way managers evaluated and supervised their workplace.

Yet, what is it that must be measured? That is the question each manager must ask as he/she analyzes the organization. Developing performance measure is not an exact science, rather it is based on understanding the goal of the organization and the associated processes which have been implemented to reach that goal.

(VG-13-3)

A. Purpose: The purpose of measuring the various processes in an organization is to support and enhance improvement, provide feedback, identify where to focus attention and resources, and to describe a system's capability and level of performance. In essence, measurement provides management with key information from which they can manage. It is difficult to effectively manage something that is not measured. When used correctly, measurements can help managers bring about improvement in an organization by allowing them properly focus on the vital areas of the organization.

(VG-13-4)

B. Performance Measurement Terms: These terms are frequently used in developing performance measures.

1. Performance Objective - a description of what is to be achieved.

2. Performance Measure - a count of the achievement.

3. Expected Performance - the target against which achievements are to be judged.

(VG-13-5)

C. Performance Criteria: Organizational performance is a function of the interrelationship between seven performance criteria.

1. **Effectiveness** is the accomplishment of the right things, on time, and within specified quality requirements. This criteria focuses on the output or outcome side of a system or process. Mathematically defined as Actual Output divided by Expected Output (Actual Output/Expected Output).

2. **Efficiency** is the amount of resources expected to be consumed divided by the amount of resources actually consumed. This criteria focuses on the input side of a system or process.

3. **Quality:** Five quality checkpoints (QCPs)

(VG-13-6)

- QCP1: the selection and management of upstream systems, e.g., communicating with the customer and establishing requirements and specifications and designing products/services to meet them.
- QCP2: incoming quality control, is the organizational system receiving what it needs from the upstream processes?
- QCP3: in process quality control, building quality into the product or service. Management support systems in place to ensure quality is measured, promoted, encouraged, and rewarded.
- QCP4: outgoing quality control, assurance that product or service meets requirements/specifications.
- QCP5: focus on downstream systems, proactive, detailed understanding of what customer wants, and how well products/ services are satisfying those needs.

(VG-13-5)

4. **Productivity** is a measure of the output relative to the input. Productivity is measured by dividing the Output by Input (Output/Input).

5. **Quality of Work Life** is the effective response or reaction of the people in the organizational system to any number of factors such as working conditions, leadership, feedback, task identity/significance, skill variety, etc.

6. **Innovation** is the creative process of changing technology, methods, procedures, policies, etc. This is a very hard criteria to measure in relation to the other criteria. Normally various assumptions are made by benchmarking the as is process and then comparing the new process against it.

7. **Profitability and/or Cost Savings:** Profitability is measured by comparing revenues versus cost; cost savings is measured by comparing actual cost versus budgeted cost.

(VG-13-7)

D. Attributes: Performance measures should possess the following attributes:

- Valid and Reliable;
- Accurate and Precise;
- Unique;
- Understandable;
- Quantifiable;
- Controllable; and,
- Cost Effective.

(VG-13-8)

E. The information gathered from measuring should be used by the managers to:

- Support decision making;
- Drive desired behavior;
- Meet customer needs; and,
- Promote continuous improvement.

(VG-13-9)

F. Measure Development: The process for developing performance measures is initiated by first establishing a vision followed by:

- Creating strategies;
- Designing, developing, and implementing methods to achieve the strategies;
- Designing, developing, and implementing measurement and evaluation methods; and,
- Establishing cultural support systems.

(VG-13-10)

G. Measurement Process:

- Set objectives;
- Select measure;
- Set expectations;
- Produce information; and,
- Take action.

II. Guidelines:

Performance Measurement should be an integral part of any facility since it allows management to monitor and evaluate the effectiveness of various programs within an organization. DOE 5480.19 discusses various methods that management should use in order to effectively measure performance of the organization.

(VG-13-11)

A. Operating activities are monitored so that problems can be documented and analyzed, and corrective actions can be implemented.

B. Safety, Environment, and Operating goals are used as a management tool for improving performance and for measuring effectiveness in areas such as:

- Minimizing the unavailability of safety systems;
- Minimizing personnel errors;
- Maintaining radiation exposure As Low As Reasonably Achievable;
- Minimizing unscheduled facility shutdowns per year; and,
- Minimizing waste.

C. Goals are auditable, measurable, realistic, and challenging, and facilitate improvement.

D. Inspections, audits, reviews, investigations, surveillance, and self-assessments of operating activities are performed to evaluate a facility's ability to meet its goals and to identify areas for improvement. Identified deficiencies are documented, trended, and corrected.

(VG-13-12)

E. Examples of CONOPS Related Measures:

- Total Downtime of Safety Systems;
- Number of CONOPS related occurrences;
- Percent Reduction in Overtime; and,
- Percent Reduction in Worker Exposure to Radiation.

(VG-13-13)

F. Example of an Application of Results:

1. **Cost Plus Award Fee Process:** For Maintenance and Operating (M&O) type of contracts, the contractor is given funds for operating expenses plus a percentage of an award fee that represents profit to the contractor. Usually a minimum percentage, such as 50%, is guaranteed regardless of performance quality. The remaining percentage is "earned" by satisfying performance objectives that are negotiated at the beginning of the rating period. The DOE person responsible for evaluating the contractor against the established performance objective(s) is called a performance monitor. Input from all of the performance monitors is collected at the end of the rating period (usually quarterly) by the contracting officer, who then determines the percentage of remaining fee that is awarded to the contractor.

NOTES